



#9

## SEQUENCE LISTING

<110> Kalluri, Raghuram

<120> ANTI-ANGIOGENIC PROTEINS AND FRAGMENTS AND METHODS OF USE THEREOF

<130> 2312/2082B (formerly 1440.1027-016)

<140> US 10/032,221

<141> 2001-12-21

<150> PCT/US01/00565

<151> 2001-01-08

<150> US 09/625,191

<151> 2000-07-21

<150> US 09/543,371

<151> 2000-04-04

<150> US 09/479,118

<151> 2000-01-07

<150> US 09/335,224

<151> 1999-06-17

<150> US 60/126,175

<151> 1999-03-25

<150> US 60/089,689

<151> 1998-06-17

<160> 58

<170> PatentIn version 3.1

<210> 1

<211> 690

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1) .. (687)

<223>

<400> 1

tct gtt gat cac ggc ttc ctt gtg acc agg cat agt caa aca ata gat	48
Ser Val Asp His Gly Phe Leu Val Thr Arg His Ser Gln Thr Ile Asp	
1 5 10 15	
gac cca cag tgt cct tct ggg acc aaa att ctt tac cac ggg tac tct	96
Asp Pro Gln Cys Pro Ser Gly Thr Lys Ile Leu Tyr His Gly Tyr Ser	
20 25 30	
ttg ctc tac gtg caa ggc aat gaa cgg gcc cat gga cag gac ttg ggc	144
Leu Leu Tyr Val Gln Gly Asn Glu Arg Ala His Gly Gln Asp Leu Gly	

35	40	45	
acg gcc ggc agc tgc ctg cgc aag ttc agc aca atg ccc ttc ctg ttc			192
Thr Ala Gly Ser Cys Leu Arg Lys Phe Ser Thr Met Pro Phe Leu Phe			
50	55	60	
tgc aat att aac aac gtg tgc aac ttt gca tca cga aat gac tac tcg			240
Cys Asn Ile Asn Asn Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser			
65	70	75	80
tac tgg ctg tcc acc cct gag ccc atg ccc atg tca atg gca ccc atc			288
Tyr Trp Leu Ser Thr Thr Pro Glu Pro Met Pro Met Ser Met Ala Pro Ile			
	85	90	95
acg ggg gaa aac ata aga cca ttt att agt agg tgt gct gtg tgt gag			336
Thr Gly Glu Asn Ile Arg Pro Phe Ile Ser Arg Cys Ala Val Cys Glu			
	100	105	110
gcg cct gcc atg gtg atg gcc gtg cac agc cag acc att cag atc cca			384
Ala Pro Ala Met Val Met Ala Val His Ser Gln Thr Ile Gln Ile Pro			
	115	120	125
ccg tgc ccc agc ggg tgg tcc tcg ctg tgg atc ggc tac tct ttt gtg			432
Pro Cys Pro Ser Gly Trp Ser Ser Leu Trp Ile Gly Tyr Ser Phe Val			
	130	135	140
atg cac acc agc gct ggt gca gaa ggc tct ggc caa gcc ctg gcg tcc			480
Met His Thr Ser Ala Gly Ala Glu Gly Ser Gly Gln Ala Leu Ala Ser			
	145	150	155
ccc ggc tcc tgc ctg gag gag ttt aga agt gcg cca ttc atc gag tgt			528
Pro Gly Ser Cys Leu Glu Glu Phe Arg Ser Ala Pro Phe Ile Glu Cys			
	165	170	175
cac ggc cgt ggg acc tgc aat tac tac gca aac gct tac agc ttt tgg			576
His Gly Arg Gly Thr Cys Asn Tyr Tyr Ala Asn Ala Tyr Ser Phe Trp			
	180	185	190
ctc gcc acc ata gag agg agc gag atg ttc aag aag cct acg ccg tcc			624
Leu Ala Thr Ile Glu Arg Ser Glu Met Phe Lys Lys Pro Thr Pro Ser			
	195	200	205
acc ttg aag gca ggg gag ctg cgc acg cac gtc agc cgc tgc caa gtc			672
Thr Leu Lys Ala Gly Glu Leu Arg Thr His Val Ser Arg Cys Gln Val			
	210	215	220
tgt atg aga aga aca taa			690
Cys Met Arg Arg Thr			
225			

<210> 2  
 <211> 229  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 2

Ser Val Asp His Gly Phe Leu Val Thr Arg His Ser Gln Thr Ile Asp  
 1 5 10 15  
 Asp Pro Gln Cys Pro Ser Gly Thr Lys Ile Leu Tyr His Gly Tyr Ser  
 20 25 30  
 Leu Leu Tyr Val Gln Gly Asn Glu Arg Ala His Gly Gln Asp Leu Gly  
 35 40 45  
 Thr Ala Gly Ser Cys Leu Arg Lys Phe Ser Thr Met Pro Phe Leu Phe  
 50 55 60  
 Cys Asn Ile Asn Asn Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser  
 65 70 75 80  
 Tyr Trp Leu Ser Thr Pro Glu Pro Met Pro Met Ser Met Ala Pro Ile  
 85 90 95  
 Thr Gly Glu Asn Ile Arg Pro Phe Ile Ser Arg Cys Ala Val Cys Glu  
 100 105 110  
 Ala Pro Ala Met Val Met Ala Val His Ser Gln Thr Ile Gln Ile Pro  
 115 120 125  
 Pro Cys Pro Ser Gly Trp Ser Ser Leu Trp Ile Gly Tyr Ser Phe Val  
 130 135 140  
 Met His Thr Ser Ala Gly Ala Glu Gly Ser Gly Gln Ala Leu Ala Ser  
 145 150 155 160  
 Pro Gly Ser Cys Leu Glu Glu Phe Arg Ser Ala Pro Phe Ile Glu Cys  
 165 170 175  
 His Gly Arg Gly Thr Cys Asn Tyr Tyr Ala Asn Ala Tyr Ser Phe Trp  
 180 185 190  
 Leu Ala Thr Ile Glu Arg Ser Glu Met Phe Lys Lys Pro Thr Pro Ser  
 195 200 205  
 Thr Leu Lys Ala Gly Glu Leu Arg Thr His Val Ser Arg Cys Gln Val  
 210 215 220

Cys Met Arg Arg Thr  
225

<210> 3  
<211> 27  
<212> DNA  
<213> Artificial sequence

<220>  
<223> pET22b(+) forward oligonucleotide primer for Arresten

<400> 3  
cgggatcctt ctgttgatca cggcttc 27

<210> 4  
<211> 27  
<212> DNA  
<213> Artificial sequence

<220>  
<223> pET22b(+) reverse oligonucleotide primer for Arresten

<400> 4  
cccaagcttt gttcttctca tacagac 27

<210> 5  
<211> 684  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (1)..(681)  
<223>

<400> 5  
gtc agc atc ggc tac ctc ctg gtg aag cac agc cag acg gac cag gag 48  
Val Ser Ile Gly Tyr Leu Leu Val Lys His Ser Gln Thr Asp Gln Glu  
1 5 10 15

ccc atg tgc ccg gtg ggc atg aac aaa ctc tgg agt gga tac agc ctg 96  
Pro Met Cys Pro Val Gly Met Asn Lys Leu Trp Ser Gly Tyr Ser Leu  
20 25 30

ctg tac ttc gag ggc cag gag aag gcg cac aac cag gac ctg ggg ctg 144  
Leu Tyr Phe Glu Gly Gln Glu Lys Ala His Asn Gln Asp Leu Gly Leu  
35 40 45

gcg ggc tcc tgc ctg gcg cgg ttc agc acc atg ccc ttc ctg tac tgc 192  
Ala Gly Ser Cys Leu Ala Arg Phe Ser Thr Met Pro Phe Leu Tyr Cys  
50 55 60

aac cct ggt gat gtc tgc tac tat gcc agc cgg aac gac aag tcc tac 240  
Asn Pro Gly Asp Val Cys Tyr Tyr Ala Ser Arg Asn Asp Lys Ser Tyr

65	70	75	80	
tgg ctc tct acc act gcg ccg ctg ccc atg atg ccc gtg gcc gag gac				288
Trp Leu Ser Thr Thr Ala Pro Leu Pro Met Met Pro Val Ala Glu Asp				
	85	90	95	
gag atc aag ccc tac atc agc cgc tgt tct gtg tgt gag gcc ccg gcc				336
Glu Ile Lys Pro Tyr Ile Ser Arg Cys Ser Val Cys Glu Ala Pro Ala				
	100	105	110	
atc gcc atc gcg gtc cac agt cag gat gtc tcc atc cca cac tgc cca				384
Ile Ala Ile Ala Val His Ser Gln Asp Val Ser Ile Pro His Cys Pro				
	115	120	125	
gct ggg tgg cgg agt ttg tgg atc gga tat tcc ttc ctc atg cac acg				432
Ala Gly Trp Arg Ser Leu Trp Ile Gly Tyr Ser Phe Leu Met His Thr				
	130	135	140	
gcg gcg gga gac gaa ggc ggt ggc caa tca ctg gtg tca ccg ggc agc				480
Ala Ala Gly Asp Glu Gly Gly Gly Gln Ser Leu Val Ser Pro Gly Ser				
	145	150	155	160
tgt cta gag gac ttc cgc gcc aca cca ttc atc gaa tgc aat gga ggc				528
Cys Leu Glu Asp Phe Arg Ala Thr Pro Phe Ile Glu Cys Asn Gly Gly				
	165	170	175	
cgc ggc acc tgc cac tac tac gcc aac aag tac agc ttc tgg ctg acc				576
Arg Gly Thr Cys His Tyr Tyr Ala Asn Lys Tyr Ser Phe Trp Leu Thr				
	180	185	190	
acc att ccc gag cag agc ttc cag ggc tcg ccc tcc gcc gac acg ctc				624
Thr Ile Pro Glu Gln Ser Phe Gln Gly Ser Pro Ser Ala Asp Thr Leu				
	195	200	205	
aag gcc ggc ctc atc cgc aca cac atc agc cgc tgc cag gtg tgc atg				672
Lys Ala Gly Leu Ile Arg Thr His Ile Ser Arg Cys Gln Val Cys Met				
	210	215	220	
aag aac ctg tga				684
Lys Asn Leu				
225				

<210> 6  
 <211> 227  
 <212> PRT  
 <213> Homo sapiens

<400> 6

Val	Ser	Ile	Gly	Tyr	Leu	Leu	Val	Lys	His	Ser	Gln	Thr	Asp	Gln	Glu
1				5					10					15	

Pro	Met	Cys	Pro	Val	Gly	Met	Asn	Lys	Leu	Trp	Ser	Gly	Tyr	Ser	Leu
			20					25						30	

Leu Tyr Phe Glu Gly Gln Glu Lys Ala His Asn Gln Asp Leu Gly Leu  
35 40 45

Ala Gly Ser Cys Leu Ala Arg Phe Ser Thr Met Pro Phe Leu Tyr Cys  
50 55 60

Asn Pro Gly Asp Val Cys Tyr Tyr Ala Ser Arg Asn Asp Lys Ser Tyr  
65 70 75 80

Trp Leu Ser Thr Thr Ala Pro Leu Pro Met Met Pro Val Ala Glu Asp  
85 90 95

Glu Ile Lys Pro Tyr Ile Ser Arg Cys Ser Val Cys Glu Ala Pro Ala  
100 105 110

Ile Ala Ile Ala Val His Ser Gln Asp Val Ser Ile Pro His Cys Pro  
115 120 125

Ala Gly Trp Arg Ser Leu Trp Ile Gly Tyr Ser Phe Leu Met His Thr  
130 135 140

Ala Ala Gly Asp Glu Gly Gly Gly Gln Ser Leu Val Ser Pro Gly Ser  
145 150 155 160

Cys Leu Glu Asp Phe Arg Ala Thr Pro Phe Ile Glu Cys Asn Gly Gly  
165 170 175

Arg Gly Thr Cys His Tyr Tyr Ala Asn Lys Tyr Ser Phe Trp Leu Thr  
180 185 190

Thr Ile Pro Glu Gln Ser Phe Gln Gly Ser Pro Ser Ala Asp Thr Leu  
195 200 205

Lys Ala Gly Leu Ile Arg Thr His Ile Ser Arg Cys Gln Val Cys Met  
210 215 220

Lys Asn Leu  
225

<210> 7

<211> 27

<212> DNA

<213> Artificial sequence

```

<220>
<223> pET22b(+) forward oligonucleotide primer for Canstatin

<400> 7
cgggatcctg tcagcatcgg ctacctc 27

<210> 8
<211> 27
<212> DNA
<213> Artificial sequence

<220>
<223> pET22b(+) reverse oligonucleotide primer for Canstatin

<400> 8
cccaagcttc aggttcttca tgcacac 27

<210> 9
<211> 735
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(732)
<223>

<400> 9
ggt ttg aaa gga aaa cgt gga gac agt gga tca cct gca acc tgg aca 48
Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp Thr
1 5 10 15

acg aga ggc ttt gtc ttc acc cga cac agt caa acc aca gca att cct 96
Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile Pro
20 25 30

tca tgt cca gag ggg aca gtg cca ctc tac agt ggg ttt tct ttt ctt 144
Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe Leu
35 40 45

ttt gta caa gga aat caa cga gcc cac gga caa gac ctt gga act ctt 192
Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu
50 55 60

ggc agc tgc ctg cag cga ttt acc aca atg cca ttc tta ttc tgc aat 240
Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn
65 70 75 80

gtc aat gat gta tgt aat ttt gca tct cga aat gat tat tca tac tgg 288
Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp
85 90 95

ctg tca aca cca gct ctg atg cca atg aac atg gct ccc att act ggc 336
Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly

```

100	105	110	
aga gcc ctt gag cct tat ata agc	aga tgc act gtt tgt gaa ggt cct	384	
Arg Ala Leu Glu Pro Tyr Ile Ser	Arg Cys Thr Val Cys Glu Gly Pro		
115	120	125	
gcg atc gcc ata gcc gtt cac agc	caa acc act gac att cct cca tgt	432	
Ala Ile Ala Ile Ala Val His Ser	Gln Thr Thr Asp Ile Pro Pro Cys		
130	135	140	
cct cac ggc tgg att tct ctc tgg	aaa gga ttt tca ttc atc atg ttc	480	
Pro His Gly Trp Ile Ser Leu Trp	Lys Gly Phe Ser Phe Ile Met Phe		
145	150	155	
aca agt gca ggt tct gag ggc acc	ggg caa gca ctg gcc tcc cct ggc	528	
Thr Ser Ala Gly Ser Glu Gly Thr	Gly Gln Ala Leu Ala Ser Pro Gly		
165	170	175	
tcc tgc ctg gaa gaa ttc cga gcc	agc cca ttt cta gaa tgt cat gga	576	
Ser Cys Leu Glu Glu Phe Arg Ala	Ser Pro Phe Leu Glu Cys His Gly		
180	185	190	
aga gga acg tgc aac tac tat tca	aat tcc tac agt ttc tgg ctg gct	624	
Arg Gly Thr Cys Asn Tyr Tyr Ser	Asn Ser Tyr Ser Phe Trp Leu Ala		
195	200	205	
tca tta aac cca gaa aga atg ttc	aga aag cct att cca tca act gtg	672	
Ser Leu Asn Pro Glu Arg Met Phe	Arg Lys Pro Ile Pro Ser Thr Val		
210	215	220	
aaa gct ggg gaa tta gaa aaa ata	ata agt cgc tgt cag gtg tgc atg	720	
Lys Ala Gly Glu Leu Glu Lys Ile	Ile Ser Arg Cys Gln Val Cys Met		
225	230	235	
aag aaa aga cac tga		735	
Lys Lys Arg His			

<210> 10  
 <211> 244  
 <212> PRT  
 <213> Homo sapiens

<400> 10

Gly Leu Lys Gly Lys Arg Gly Asp Ser	Gly Ser Pro Ala Thr Trp Thr
1	5 10 15
Thr Arg Gly Phe Val Phe Thr Arg His	Ser Gln Thr Thr Ala Ile Pro
20	25 30
Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser	Gly Phe Ser Phe Leu
35	40 45



Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu  
 50 55 60

Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn  
 65 70 75 80

Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp  
 85 90 95

Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly  
 100 105 110

Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro  
 115 120 125

Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys  
 130 135 140

Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe  
 145 150 155 160

Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly  
 165 170 175

Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly  
 180 185 190

Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala  
 195 200 205

Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val  
 210 215 220

Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met  
 225 230 235 240

Lys Lys Arg His

<210> 11  
 <211> 27  
 <212> DNA  
 <213> Artificial sequence

<220>  
<223> pET22b(+) forward oligonucleotide primer for Tumstatin

<400> 11  
cgggatccgg gtttgaaagg aaaacgt

27

<210> 12  
<211> 27  
<212> DNA  
<213> Artificial sequence

<220>  
<223> pET22b(+) reverse oligonucleotide primer for Tumstatin

<220>  
<221> misc\_feature  
<222> (1)..(27)  
<223> primer

<400> 12  
cccaagcttt cagtgtcttt tcttcat

27

<210> 13  
<211> 8  
<212> PRT  
<213> Artificial sequence

<220>  
<223> Additional vector sequence added to protein

<400> 13

Met Asp Ile Gly Ile Asn Ser Asp  
1 5

<210> 14  
<211> 7  
<212> PRT  
<213> Artificial sequence

<220>  
<223> Additional vector sequence added to protein

<400> 14

Lys Leu Ala Ala Ala Leu Glu  
1 5

<210> 15  
<211> 28  
<212> DNA

<213> Artificial sequence

<220>

<223> pPICZaA forward oligonucleotide primer for Arresten

<400> 15

ttcgggaattc tctgttgatc acggcttc

28

<210> 16

<211> 35

<212> DNA

<213> Artificial sequence

<220>

<223> pPICZaA reverse oligonucleotide primer for Arresten

<400> 16

tgctctagag gtgttcttct catacagact tggca

35

<210> 17

<211> 31

<212> DNA

<213> Artificial sequence

<220>

<223> pPICZaA forward oligonucleotide primer for Canstatin

<400> 17

ttcgggaattc gtcagcatcg gctacctcct g

31

<210> 18

<211> 32

<212> DNA

<213> Artificial sequence

<220>

<223> pPICZaA reverse oligonucleotide primer for Canstatin

<400> 18

ggggtagcccc caggttcttc atgcacacct gg

32

<210> 19

<211> 1

<212> PRT

<213> Artificial Sequence

<220>

<223> Deleted Sequence

<400> 19

Pro

1

<210> 20  
<211> 124  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Tumstatin 333 (amino acids 1-124 of SEQ ID NO:10)

<400> 20

Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp Thr  
1 5 10 15

Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile Pro  
20 25 30

Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe Leu  
35 40 45

Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu  
50 55 60

Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn  
65 70 75 80

Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp  
85 90 95

Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly  
100 105 110

Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val  
115 120

<210> 21  
<211> 120  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Tumstatin 334 (amino acids 125-244 of SEQ ID NO:10)

<400> 21

Cys Glu Gly Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp  
1 5 10 15

Ile Pro Pro Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser  
20 25 30

Phe Ile Met Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu  
35 40 45

Ala Ser Pro Gly Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu  
50 55 60

Glu Cys His Gly Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser  
65 70 75 80

Phe Trp Leu Ala Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile  
85 90 95

Pro Ser Thr Val Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys  
100 105 110

Gln Val Cys Met Lys Lys Arg His  
115 120

<210> 22

<211> 191

<212> PRT

<213> Artificial Sequence

<220>

<223> Tum-1 (Tumstatin N-53) (amino acids 54-244 of SEQ ID NO:10)

<400> 22

Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu Gly Ser Cys Leu Gln  
1 5 10 15

Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp Val Cys  
20 25 30

Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu Ser Thr Pro Ala  
35 40 45

Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly Arg Ala Leu Glu Pro  
50 55 60

Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro Ala Ile Ala Ile Ala  
65 70 75 80

Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys Pro His Gly Trp Ile  
85 90 95

Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe Thr Ser Ala Gly Ser  
100 105 110

Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly Ser Cys Leu Glu Glu  
115 120 125

Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly Arg Gly Thr Cys Asn  
130 135 140

Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala Ser Leu Asn Pro Glu  
145 150 155 160

Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val Lys Ala Gly Glu Leu  
165 170 175

Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met Lys Lys Arg His  
180 185 190

<210> 23  
<211> 132  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Tum-2 (amino acids 1-132 of SEQ ID NO:10)  
<400> 23

Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp Thr  
1 5 10 15

Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile Pro  
20 25 30

Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe Leu  
35 40 45

Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu  
50 55 60

Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn

65

70

75

80

Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp  
                   85                                  90                                  95

Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly  
                   100                                  105                                  110

Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro  
                   115                                  120                                  125

Ala Ile Ala Ile  
                   130

<210> 24

<211> 112

<212> PRT

<213> Artificial Sequence

<220>

<223> Tum-3 (amino acids 133-244 of SEQ ID NO:10)

<400> 24

Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys Pro His Gly Trp  
   1                  5                                  10                                  15

Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe Thr Ser Ala Gly  
                   20                                  25                                  30

Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly Ser Cys Leu Glu  
                   35                                  40                                  45

Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly Arg Gly Thr Cys  
                   50                                  55                                  60

Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala Ser Leu Asn Pro  
   65                                  70                                  75                                  80

Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val Lys Ala Gly Glu  
                   85                                  90                                  95

Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met Lys Lys Arg His  
                   100                                  105                                  110

<210> 25  
<211> 64  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Tum-4 (amino acids 181-244 of SEQ ID NO:10)

<400> 25

Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly Arg Gly Thr Cys  
1 5 10 15

Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala Ser Leu Asn Pro  
20 25 30

Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val Lys Ala Gly Glu  
35 40 45

Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met Lys Lys Arg His  
50 55 60

<210> 26  
<211> 79  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Tum-5 (amino acids 54-132 of SEQ ID NO:10)

<400> 26

Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu Gly Ser Cys Leu Gln  
1 5 10 15

Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp Val Cys  
20 25 30

Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu Ser Thr Pro Ala  
35 40 45

Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly Arg Ala Leu Glu Pro  
50 55 60

Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro Ala Ile Ala Ile  
65 70 75

<210> 27



<211> 19  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> T1 (amino acids 1-19 of SEQ ID NO:10)

<400> 27

Gly	Leu	Lys	Gly	Lys	Arg	Gly	Asp	Ser	Gly	Ser	Pro	Ala	Thr	Trp	Thr
1				5					10					15	

Thr Arg Gly

<210> 28  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> T2 (amino acids 53-72 of SEQ ID NO:10)

<400> 28

Asn	Gln	Arg	Ala	His	Gly	Gln	Asp	Leu	Gly	Thr	Leu	Gly	Ser	Cys	Leu
1				5					10					15	

Gln Arg Phe Thr  
20

<210> 29  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> T3 (amino acids 68-87 of SEQ ID NO:10)

<400> 29

Leu	Gln	Arg	Phe	Thr	Thr	Met	Pro	Phe	Leu	Phe	Cys	Asn	Val	Asn	Asp
1				5					10					15	

Val Cys Asn Phe  
20

<210> 30  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>

<223> T4 (amino acids 83-102 of SEQ ID NO:10)

<400> 30

Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu Ser  
1 5 10 15

Thr Pro Ala Leu  
20

<210> 31

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> T5 (amino acids 98-116 of SEQ ID NO:10)

<400> 31

Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly Arg  
1 5 10 15

Ala Leu Glu

<210> 32

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> T6 (amino acids 113-131 of SEQ ID NO:10)

<400> 32

Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro  
1 5 10 15

Ala Ile Ala

<210> 33

<211> 88

<212> PRT

<213> Artificial Sequence

<220>

<223> Tumstatin-45-132 (amino acids 45-132 of SEQ ID NO:10)

<400> 33

Phe Ser Phe Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp  
1 5 10 15

Leu Gly Thr Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe  
20 25 30

Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp  
35 40 45

Tyr Ser Tyr Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala  
50 55 60

Pro Ile Thr Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val  
65 70 75 80

Cys Glu Gly Pro Ala Ile Ala Ile  
85

<210> 34

<211> 88

<212> PRT

<213> Artificial Sequence

<220>

<223> Tumstatin-5-125-C-A (amino acids 45-132 of SEQ ID NO:10; alanine  
has been substituted for the cysteine residue at position 125 of  
the full-length Tumstatin molecule)

<400> 34

Phe Ser Phe Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp  
1 5 10 15

Leu Gly Thr Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe  
20 25 30

Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp  
35 40 45

Tyr Ser Tyr Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala  
50 55 60

Pro Ile Thr Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val  
65 70 75 80

Ala Glu Gly Pro Ala Ile Ala Ile  
85

<210> 35  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> synthetic blocking peptide

<400> 35

Cys Asp Cys Arg Gly Asp Cys Phe Cys  
1 5

<210> 36  
<211> 5  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> synthetic blocking peptide

<400> 36

Cys Asn Gly Arg Cys  
1 5

<210> 37  
<211> 25  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> T7 (amino acids 73-97 of SEQ ID NO:10)

<400> 37

Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala  
1 5 10 15

Ser Arg Asn Asp Tyr Ser Tyr Trp Leu  
20 25

<210> 38  
<211> 25  
<212> PRT  
<213> Artificial Sequence

<220>

<223> T7-mutant (amino acids 73-97 of SEQ ID NO:10; methionine has been substituted for the leucine residue at position 77 of the full-length Tumstatin molecule, and isoleucine has been substituted for valine at position 81, and asparagine has been substituted for a spartic acid at position 83)

<400> 38

Thr Met Pro Phe Met Phe Cys Asn Ile Asn Asn Val Cys Asn Phe Ala  
1 5 10 15

Ser Arg Asn Asp Tyr Ser Tyr Trp Leu  
20 25

<210> 39

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> T8 (amino acids 68-94 of SEQ ID NO:10; lysine has been substituted for the leucine residue at position 68 of the full-length Tumstatin molecule)

<400> 39

Lys Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp  
1 5 10 15

Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser  
20 25

<210> 40

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> T8-3 (amino acids 68-94 of SEQ ID NO:10; lysine has been substituted for the leucine residue at position 68 of the full-length Tumstatin molecule, and serine has been substituted for the cysteine residues at positions 79 and 85)

<400> 40

Lys Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Ser Asn Val Asn Asp  
1 5 10 15

Val Ser Asn Phe Ala Ser Arg Asn Asp Tyr Ser  
20 25

<210> 41  
<211> 19  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> TP3 (amino acids 76-94 of SEQ ID NO:10; lysine has been substituted for the phenylalanine residue at position 76 of the full-length Tumstatin molecule, and cysteine has been substituted for the aspartic acid at position 83)

<400> 41

Lys Leu Phe Cys Asn Val Asn Cys Val Cys Asn Phe Ala Ser Arg Asn  
1 5 10 15

Asp Tyr Ser

<210> 42  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> P2 (amino acids 68-94 of SEQ ID NO:10; lysine has been substituted for the leucine residue at position 68 of the full-length Tumstatin molecule, and aspartic acid has been substituted for the cysteine residues at positions 79 and 85)

<400> 42

Lys Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Asp Asn Val Asn Asp  
1 5 10 15

Val Asp Asn Phe Ala Ser Arg Asn Asp Tyr Ser  
20 25

<210> 43  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Scrambled peptide SP1

<400> 43

Ala Asn Met Ser Arg Asn Val Phe Phe Asp Cys Thr Ser Phe Pro Val  
1 5 10 15

Cys Gln Lys Phe Leu Asn Asp Thr Arg Asn Tyr  
 20 25

<210> 44  
 <211> 27  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Scrambled peptide SP2

<400> 44

Thr Phe Asn Cys Val Lys Asn Tyr Gln Arg Leu Asp Phe Thr Ser Arg  
 1 5 10 15

Phe Val Met Asp Ser Cys Ala Asn Phe Pro Asn  
 20 25

<210> 45  
 <211> 14  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Generic peptide

<220>  
 <221> MISC\_FEATURE  
 <222> (1)..(1)  
 <223> Xaa at position 1 is any amino acid

<220>  
 <221> MISC\_FEATURE  
 <222> (2)..(2)  
 <223> Xaa at position 2 is Phe or Lys

<220>  
 <221> MISC\_FEATURE  
 <222> (5)..(5)  
 <223> Xaa at position 5 is Cys, Ser or Asp

<220>  
 <221> MISC\_FEATURE  
 <222> (9)..(9)  
 <223> Xaa at position 9 is Asp or Cys

<220>  
 <221> MISC\_FEATURE  
 <222> (11)..(11)

<223> Xaa at position 11 is Cys, Ser or Asp

<220>

<221> MISC\_FEATURE

<222> (14)..(14)

<223> Xaa at position 14 is any amino acid

<400> 45

Xaa Xaa Leu Phe Xaa Asn Val Asn Xaa Val Xaa Asn Phe Xaa  
1 5 10

<210> 46

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic Peptide

<400> 46

Thr Thr Met Pro  
1

<210> 47

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic Peptide

<400> 47

Phe Thr Thr Met Pro  
1 5

<210> 48

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic Peptide

<400> 48

Arg Phe Thr Thr Met Pro  
1 5



<210> 49  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic peptide

<400> 49

Gln Arg Phe Thr Thr Met Pro  
1 5

<210> 50  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 50

Leu Gln Arg Phe Thr Thr Met Pro  
1 5

<210> 51  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 51

Lys Gln Arg Phe Thr Thr Met Pro  
1 5

<210> 52  
<211> 4  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 52

Ala Ser Arg Asn  
1

<210> 53

<211> 5  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 53

Ala Ser Arg Asn Asp  
1 5

<210> 54  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 54

Ala Ser Arg Asn Asp Tyr  
1 5

<210> 55  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 55

Ala Ser Arg Asn Asp Tyr Ser  
1 5

<210> 56  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 56

Ala Ser Arg Asn Asp Tyr Ser Tyr  
1 5

<210> 57  
<211> 9

<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 57

Ala Ser Arg Asn Asp Tyr Asp Tyr Trp  
1 5

<210> 58  
<211> 10  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Generic Peptide

<400> 58

Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu  
1 5 10